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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/506,318	02/17/2000	Fumio Echigo	10873.487US01	7531
23552	7590	03/04/2004	EXAMINER	
MERCHANT & GOULD PC			MORRIS, TERELL H	
P.O. BOX 2903			ART UNIT	
MINNEAPOLIS, MN 55402-0903			PAPER NUMBER	

1771

DATE MAILED: 03/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<b>Application No.</b> 09/506,318	<b>Applicant(s)</b> ECHIGO ET AL.	
	<b>Examiner</b> John J. Guarriello	<b>Art Unit</b> 1771	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 13,14,16-26 and 28-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13,14 and 16-26, 28-62 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

15. The Examiner acknowledges the amendment to independent claims 13, 25, and new claims 39-62 and response of 11/28/2003.

16. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

17. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Rejections - 35 USC § 103***

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 13, 14, 16-26, 28-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 807 703 in view of Shrier et al. 6,172,590.

EP '703 describes a non-woven fabric cloth and a prepreg and a printed wiring board (corresponding to the claimed prepreg and claimed circuit board) using the non-woven fabric cloth substrate, (see abstract; page 2, lines 3-6; lines 33-53; page 3, lines 1-27). EP'703 describes aromatic polyamide short fibers (page 2, line 45) which are 0.5-6.0 deniers in size and 2-14 mm in length, (page 2, lines 39-41). EP'703 describes the fabric substrate is made by the wet paper

method, (page 2, lines 42-43). EP'703 describes the substrate has a wt. Of 30-120 g/square meter, and is 50-300 microns thick, (page 2, lines 48-49). EP'703 describes a resin varnish or epoxy or phenol impregnating the cloth substrate, (page 2, lines 50-51, 55-58).

EP'703 differs from the claimed invention because it is silent about the inorganic binder residue of glass.

Shrier describes glass materials which have been used as inorganic binders in variable voltage materials (which corresponds to the claimed prepreg or circuit board of the claimed invention), (column 7, lines 35-44). Shrier further describes polymer binders which can be organopolysiloxane, (column 6, lines 64-66; column 7, lines 8-10, lines 20-26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the the silicated inorganic binder of Shrier with the nonwoven fabric cloth of EP'703 motivated with the expectation that there would be an improvement in the properties of the nonwoven material for the dielectric properties for a more reliable circuit board as noted in EP'703 with improved insulating

properties. Moreover, although siloxane bonding coating is not stated it would be obvious to one of ordinary skill in the art to use siloxane bonding for its ability for moisture reduction for the fibers in the circuit board utility as noted by Shrier, (column 7, lines 16-21).

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tsukada et al. 5,144,536 describes inorganic binders or adhesives in circuit substrates, (column 24, lines 58-68). Sakai et al. 5,858,884 describes short fibers with prepreg and nonwoven fabric substrates, (see abstract; column 2, lines 49-64).

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Guarriello whose telephone number is 571-272-1476. The examiner can normally be reached on 8 hr. flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel H. Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John J. Guarriello  
Patent Examiner  
Art Unit 1771

February 23, 2004  
February 26, 2004



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